WHAT IS CLAIMED IS:

1. A return address prediction mechanism comprising:

a return storage, wherein the return storage comprises a first entry, wherein the first entry comprises a count and a first return address that corresponds to a recently detected call operation;

a controller coupled to the return storage and configured to receive a new return address corresponding to a most recently detected call instruction, wherein the controller is further configured to compare the new return address to the first return address, wherein if the new return address equals the first return address, the controller is configured to increase a value of the count.

2. The return address prediction mechanism of claim 1, wherein if the new return address does not equal the first return address, the controller is configured to allocate a new entry for the new return address.

3. The return address prediction mechanism of claim 2, wherein the controller is configured to initialize a count in the new entry to a minimum count value.

4. The return address prediction mechanism of claim 1, wherein if the new return address equals the first return address and the value of the count equals a maximum count value, the controller is configured to allocate a new entry for the new return address.

5. The return address prediction mechanism of claim 1, wherein the return storage is implemented as a stack structure, and wherein the first entry is identified by a top of stack pointer.

6. The return address prediction mechanism of claim 5, wherein if the new return address does not equal the first return address, the controller is configured to allocate a

new entry for the new return address and to modify the top of stack pointer to identify the new entry.

7. The return address prediction mechanism of claim 5, wherein in response to a branch prediction being made, the controller is configured to save a copy of a current value of the top of stack pointer.

8. The return address prediction mechanism of claim 7, wherein the controller is further configured to save a copy of the value of the count associated with the first entry if the first entry is identified by the top of stack pointer when the branch prediction is made.

9. The return address prediction mechanism of claim 1, wherein each entry in the return storage comprises a respective count.

10. The return address prediction mechanism of claim 1, wherein fewer than all entries in the return storage comprise a respective count.

11. The return address prediction mechanism of claim 1, wherein in response to a return instruction being detected, the controller is configured to provide the most recently detected return address as a predicted return address and to decrease a value of a count associated with the most recently detected return address.

12. The return address prediction mechanism of claim 11, wherein if the value of the count associated with the most recently detected return address is equal to a minimum value after being decreased, the controller is further configured to remove the most recently detected return address's entry from the return storage.

13. The return address prediction mechanism of claim 1, wherein the first entry comprises a pointer to a next entry in the return storage.

14. The return address prediction mechanism of claim 1, wherein the first entry comprises a plurality of pointers to next entries in the return storage, wherein each of the pointers is associated with a particular value of the count.

15. The return address prediction mechanism of claim 1, further comprising a stack structure configured to store tags identifying entries in the return storage, wherein a top tag in the stack structure identifies the first entry.

16. A return address prediction mechanism comprising:

a return storage comprising a first entry, wherein the first entry comprises a count and a first return address that corresponds to a most recently detected call operation;

a controller coupled to the return storage and configured to provide a predicted return address, wherein if the count indicates that the first return address corresponds to more than one call operation, the controller is configured to provide the predicted return address by providing the first return address and decreasing the count.

17. The return address prediction mechanism of claim 16, wherein if the count indicates that the first return address corresponds to a single call operation, the controller is configured to provide the return address by providing the first return address and removing the first entry from the return storage.

18. A method of predicting return addresses, the method comprising:

detecting a call instruction in an instruction stream;

in response to said detecting, comparing a first return address stored in a first entry in a return storage to a second return address that is associated with the call instruction; and

if the first return address equals the second return address, increasing a first count associated with the first entry.

19. The method of claim 18, further comprising allocating a second entry to the second return address in the return storage if the second return address does not equal the first return address.

20. The method of claim 19, wherein the controller is configured to initialize a second count associated with the second entry to a minimum count value.

21. The method of claim 19, further comprising providing the second return address and decreasing a second count associated with the second entry in response to a return instruction being detected.

22. The method of claim 21, further comprising removing the second entry from the return storage if the value of the second count associated with the second return address is equal to a minimum value as a result of said decreasing.

23. The method of claim 18, wherein said increasing comprises incrementing a counter.

24. The method of claim 18, wherein said detecting comprises a branch target buffer detecting the call instruction in response to the call instruction being fetched from an instruction cache.

25. The method of claim 18, wherein said detecting comprises a decode unit detecting the call instruction in response to decoding the call instruction.

26. The method of claim 18, further comprising allocating a second entry in the return storage to the second return address if the second return address equals the first return address and the value of the first count equals a maximum count value.

27. The method of claim 18, wherein the return storage is implemented as a stack structure, and wherein a top entry in the return storage is identified by a top of stack pointer.

28. The method of claim 27, further comprising modifying the top of stack pointer to identify a second entry in the return storage allocated to the second return address if the second return address does not equal the first return address.

29. The method of claim 27, further comprising saving a copy of a current value of the top of stack pointer in response to a branch prediction being made.

30. The method of claim 29, further comprising saving a copy of the count associated with the first entry if the first entry is identified by the top of stack pointer when the branch prediction is made.

31. The method of claim 29, further comprising detecting that the branch prediction was erroneous and, in response, restoring the top of stack pointer to a value of the copy.

32. The method of claim 18, wherein each entry in the return storage has an associated count.

33. The method of claim 18, wherein fewer than all entries in the return storage have an associated count.

34. The method of claim 18, wherein the first entry comprises a pointer to a next entry in the return storage.

35. A method of predicting a return address, the method comprising:

detecting a return instruction in an instruction stream;

in response to said detecting, providing a first return address stored in a return storage as a predicted return address and decreasing a count associated with the first return address.